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Concussion Rehabilitation: Vestibular and Physiotherapy

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Does using vestibular rehabilitation and physiotherapy shorten the length of recovery time from a concussion as compared to cognitive rest?

Abstract

Recent research has come out to suggest that a prolonged resting period after a concussion may not be the most beneficial way to recover. Many doctors of physical therapy seem to have a consensus that athletes that acquire a sports-related concussion should seek treatment through body movement, not the typical resting and abstaining from exercise protocol. Recent research has shown that vestibular and physiotherapy will reduce the recovery time after a concussion. Seventy-one percent of a treatment group had returned within eight weeks, compared to seven percent in a control group. The participants in the treatment group were four times more likely to return in eight weeks. Many studies have come to similar conclusions and have gotten similar results. There is a clear advantage in using rehab in concussion return to play. However, many variables and a lot more studies need to be done to concluded how much of an effect it has. Vestibular and physiotherapy have been shown to reduce return-to-play time in athletes with prolonged concussions.

Background

According to the American Association of Neurological Surgeons, a concussion is by definition, “an injury to the brain that results in temporary loss of normal brain function.” The U.S. National Library of Medicine states that concussions are a result of the head or body getting hit thus causing the brain to move rapidly back and forth, ending up with chemical changes in the brain and sometimes even damaged brain cells. The NATA’s position statement on concussion management currently states that an athlete who has sustained a concussion should abstain from physical activity that could worsen symptoms and should immediately rest post injury.

Methods

- Subjects: 30 randomly picked individuals, between the ages of 12 and 30, who were diagnosed with a concussion and reported symptoms of dizziness, neck pain and/or headaches persisting more than 10 days.
- Exclusion criteria for subjects included fracture, other neurological conditions, musculoskeletal injuries (other than the cervical spine) that restrict activity and medications that affect neural adaptation, after being seen by a study clinician.
- Randomized control and experiment groups were assigned off a computer program to ensure balanced groups. To further ensure validity, clinicians were blind to the groups they were treating.
- Both groups performed basic range of motion exercises, stretching and postural education and followed the current standard of care protocol for sport-related concussion. Participants kept individual daily logs to ensure compliance with the at home programs.
- The intervention group received an individually designed combination of cervical spine physiotherapy and vestibular rehabilitation: joint mobilization techniques of the cervical and thoracic spine, cervical neuro-motor and sensorimotor retraining exercises; habituation, gaze stabilization, adaptation exercises, standing balance exercises, dynamic balance exercises and canalith repositioning manouvres.

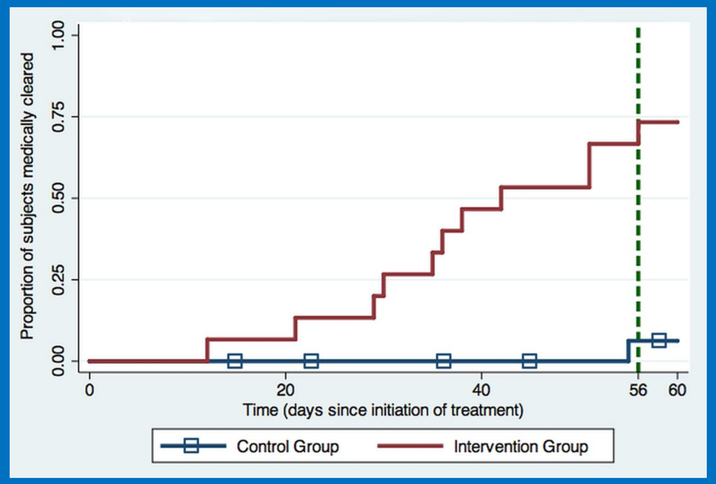

Figure 1. Proportion of patients medically cleared over time

Baseline tests	Treatment group Median (range) or percentage (%)	Control group Median (range) or percentage (%)
Age	15 year (12-27)	15 year (13-30)
Sex	11 male, 4 female	7 male, 9 female
Pervious concussion	55%	75%
Headache	93.33% (4/10)	93.75% (4/10)
Dizziness	86.33% (3/10)	82.75% (5/10)
Neck pain	93.33% (3/10)	87.5% (3/10)
Time sense injury	53 days	47 days
SCAT2 score	71	70

Figure 2. Recreation of baseline data from study

Figure 3. SCAT 2 on-field pocket card

Results

73.3% of those individuals in the intervention group returned to play within 8 weeks of treatment while only 7.1% of the group that did not receive physiotherapy and vestibular rehabilitation were able to return to play in 8 weeks (refer to Figure 1). Out of all the participants in the study, those in the intervention group were 10.27 times more likely to be medically cleared in the eight week window. Individuals who were cleared in the intervention group had a greater improvement in their SCAT 2 score than those who were not medically cleared within the time frame.

Discussion

The experiment and the data for this poster are taking from a study done in 2014. The authors and the institute for that experiment are sited below. Multiple articles were referenced for a mini meta-analysis on this topic. This was done because of the controversy and the limited amount of research on this topic. Almost every article concluded that there are benefits to vestibular rehabilitation over cognitive rest in concussed subjects. However, each study used different rehab techniques and had multiple different variables. Further research is crucial to back up this evidence before it can be clinically applied. With that research, there will be a change in current protocol for rehabilitation in athletes. Vestibular rehabilitation shortens return to play time, so why would he keep resting concussed athletes?

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